

**Louisiana Department of Environmental Quality
Office of Environmental Services**

STATEMENT OF BASIS

For

Activity Number: PER20070009

Permit No. 2894-V1

Linear Alkyl Benzene (LAB) Unit -Lake Charles Chemical Complex

Agency Interest No. 3271

SASOL North America Inc.

Westlake, Calcasieu Parish, Louisiana

I. APPLICANT

Company

SASOL North America Inc.
2201 Old Spanish Trail
Westlake, Louisiana 70669

Facility

Linear Alkyl Benzene Unit, Lake Charles Chemical Complex
2201 Old Spanish Trail, Westlake, Calcasieu Parish, Louisiana
UTM Coordinates: 473.40 kilometers East and 3346.13 kilometers North, Zone 15

II. FACILITY AND CURRENT PERMIT STATUS

Crude normal paraffins are fractionated and blended to obtain the desired feedstock for the LAB products. The paraffin feedstock is then dehydrogenated and transferred to the alkylation section where it is reacted with benzene in the presence of a catalyst to produce LAB products. The reaction mass is fractionated to recover catalyst, unreacted normal paraffins and benzene. The products are stored at the tank farm prior to shipping via tank car, truck, water vessel, or pipeline. Heavy paraffins recovered from normal crude paraffins fractionation are stored and then transferred via pipeline or water vessel.

The LAB Unit is considered to be a part of the Lake Charles Chemical Complex, which is owned and operated by SASOL. Permits for the complex are as follows:

Permit Number	Units or Sources	Date Issued
2325-V3	Ethoxylation Unit	December 9, 2008
2743-V2	Ethylene Unit	August 8, 2008
2825	Research and Development	November 26, 2002
2565-V4	Alumina Unit	April 11, 2008
PSD-LA-644	Alumina Unit	September 19, 2000
2865-V1	Alcohol Unit	June 15, 2006
2894-V0	Linear Alkyl Benzene Unit	March 15, 2005
2896-V1	Normal Paraffins	June 14, 2007

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III. PROPOSED PERMIT / PROJECT INFORMATION

Proposed Permit

A Part 70 operating permit application and Emission Inventory Questionnaire dated December 12, 2007 as well as additional information dated May 2, 2008 were submitted requesting a Part 70 operating permit modification. A request for an administrative amendment dated January 31, 2007 was also received.

A notice requesting public comment on the permit was published in *The Advocate*, Baton Rouge, and in the local newspaper. A copy of the public notice was mailed to concerned citizens listed in the Office of Environmental Services Public Notice Mailing List. The application, the statement of basis, and the proposed permit were submitted to the Calcasieu Parish Library. The proposed permit and the statement of basis were submitted to US EPA Region VI. All comments will be considered prior to a final permit decision.

Project description

SASOL North America requests a Part 70 operating permit modification for the LAB Unit to recalculate VOC emissions from two benzene tanks based on the corrected seal designs and emissions from the LAB Unit Flare and from the Hot Oil Heater based on updated sulfur content of process additive and natural gas.

Permitted Air Emissions (tons/yr)

Pollutant	Before	After	Change
PM ₁₀	13.92	14.10	+ 0.18
SO ₂	3.86	11.17	+ 7.31
NO _x	106.17	108.01	+ 1.84
CO	81.68	82.12	+ 0.44
VOC, total	66.21	66.20	- 0.01

Prevention of Significant Deterioration (PSD) Applicability

Emissions of the criteria pollutants from the project will not increase more than their PSD significance levels. Therefore, PSD analysis was not required.

Maximum Achievable Control Technology (MACT) requirements

Emissions from various sections of the LAB Unit are controlled by a flare or as required by 40 CFR 63 Subparts G and H which are determined to be MACT.

Air Modeling Analysis

Dispersion Model Used: ISCST3

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Pollutant	Averaging Period	Calculated Maximum Ground Level Concentration ($\mu\text{g}/\text{m}^3$)	Ambient Air Standard (AAS) ($\mu\text{g}/\text{m}^3$)
Benzene	Annual	11.91	12.0

General Condition XVII Activities

The facility will comply with the applicable General Condition XVII Activities emissions as required by the operating permit rule. However, General Condition XVII Activities are not subject to testing, monitoring, reporting or recordkeeping requirements. For a list of approved General Condition XVII Activities, refer to Section VIII of the proposed Part 70 permit.

Insignificant Activities

All Insignificant Activities are authorized under LAC 33:III.501.B.5. For a list of approved Insignificant Activities, refer to Section IX of the proposed Part 70 permit. The applicability of the appropriate regulations is straightforward and provided in the Facility Specific Requirements Section of the proposed permit. Similarly, the Monitoring, Reporting and Recordkeeping necessary to demonstrate compliance with the applicable terms, conditions and standards are provided in the Facility Specific Requirements Section of the proposed permit.

IV. PERMIT SHIELDS

The Permit does not include any Permit Shields

V. PERIODIC MONITORING

The Monitoring, Reporting and Recordkeeping necessary to demonstrate compliance with the applicable terms, conditions and standards are provided in the Facility Specific Requirements Section of the proposed permit.

VI. APPLICABILITY AND EXEMPTIONS OF SELECTED SUBJECT ITEMS

The explanations for the non-applicability and exemptions of selected subject items are listed in Table XI of the proposed permit.

VII. STREAMLINED REQUIREMENTS

Fugitive emissions from the unit are subject to various state and federal standards. SASOL will conduct a leak detection and repair (LDAR) program that meets requirements of the most stringent standards outline in the Specific Requirements Section of the permit and summarized as follows:

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Unit or Plant Site	Programs Streamlined	Stream Applicability	Overall Most Stringent Program
LAB Unit	40 CFR 63 Subpart H	5% OHAP	40 CFR 63 Subpart H
	40 CFR 61 Subpart J	10% VOHAP	
	NSPS Subpart VV	10% VOC	
	LAC 33:III.2122	10% VOC	
	LAC 33:III.5109	10% TAP	

VIII. GLOSSARY

Best Available Control Technologies (BACT) - An emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under this part which would be emitted from any proposed major stationary source or major modification which the administrative authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant.

CAM - Compliance Assurance Monitoring rule – A federal air regulation under 40 CFR Part 64

Carbon Black - A black colloidal substance consisting wholly or principally of amorphous carbon and used to make pigments and ink.

Carbon Monoxide (CO) – (Carbon monoxide) a colorless, odorless gas produced by incomplete combustion of any carbonaceous (gasoline, natural gas, coal, oil, etc.) material.

Cooling Tower – A cooling system used in industry to cool hot water (by partial evaporation) before reusing it as a coolant.

Continuous Emission Monitoring System (CEMS) – The total combined equipment and systems required to continuously determine air contaminants and diluent gas concentrations and/or mass emission rate of a source effluent.

Cyclone – A control device that uses centrifugal force to separate particulate matter from the carrier gas stream.

Duct Burner – A device that combusts fuel and that is placed in the exhaust duct from another source (such as a stationary gas turbine, internal combustion engine, kiln, etc.) to

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allow the firing of additional fuel to heat the exhaust gases before the exhaust gases enter a steam generating unit.

Federally Enforceable Specific Condition - A federally enforceable specific condition written to limit the potential to Emit (PTE) of a source that is permanent, quantifiable, and practically enforceable. In order to meet these requirements, the draft permit containing the federally enforceable specific condition must be placed on public notice and include the following conditions:

- A clear statement of the operational limitation or condition which limits the source's potential to emit;
- Recordkeeping requirements related to the operational limitation or condition;
- A requirement that these records be made available for inspection by LDEQ personnel;
- A requirement to report for the previous calendar year.

Grandfathered Status- Those facilities that were under actual construction or operation as of June 19, 1969, the signature date of the original Clean Air Act. These facilities are not required to obtain a permit. Facilities that are subject to Part 70 (Title V) requirements lose grandfathered status and must apply for a permit.

Heat Recovery Steam Generator (HRSG) – A steam generator that recovers exhaust heat from a gas turbine, and provides economizing and steam generation surfaces.

Hydrogen Sulfide (H₂S) - A colorless inflammable gas having the characteristic odor of rotten eggs, and found in many mineral springs. It is produced by the action of acids on metallic sulfides, and is an important chemical reagent.

Maximum Achievable Control Technology (MACT) - The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

NESHAP - National Emission Standards for Hazardous Air Pollutants –Air emission standards for specific types of facilities, as outlined in 40 CFR Parts 61 through 63

Nitrogen Oxides (NO_x) - Compounds whose molecules consists of nitrogen and oxygen.

Nonattainment New Source Review (NNSR) - A New Source Review permitting program for major sources in geographic areas that do not meet the National Ambient Air

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Quality Standards (NAAQS) at 40 CFR Part 50. Nonattainment NSR is designed to ensure that emissions associated with new or modified sources will be regulated with the goal of improving ambient air quality.

NSPS - New Source Performance Standards – Air emission standards for specific types of facilities, as outlined in 40 CFR Part 60

Organic Compound - Any compound of carbon and another element. Examples: Methane (CH_4), Ethane (C_2H_6), Carbon Disulfide (CS_2)

Part 70 Operating Permit- Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential to emit: ≥ 10 tons per year of any toxic air pollutant; ≥ 25 tons of total toxic air pollutants; and ≥ 100 tons per year of regulated pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).

PM_{10} - Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Potential to Emit (PTE) - The maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

Prevention of Significant Deterioration (PSD) – A New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.